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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/689,198	10/20/2003	Joseph D. Rainville	8540G-000213	4431

27572 7590 04/16/2008

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EXAMINER	
ECHELMEYER, ALIX ELIZABETH	
ART UNIT	**PAPER NUMBER**
1795	

MAIL DATE	DELIVERY MODE
04/16/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/689,198	RAINVILLE ET AL.	
	Examiner	Art Unit	
	Alix Elizabeth Echelmeyer	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 January 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5,8-14 and 17-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,8-14 and 17-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This Office Action is in response to the amendment filed January 9, 2008. Claims1 and 10 have been amended. Claims 6 and 15 have been cancelled. Claims 1-5, 8-14 and 17-26 are pending and are rejected for the reasons given below.

Claim Rejections - 35 USC § 112

2. The rejection of claims 1 and 10 for being indefinite for containing the limitation "rapid discharge and charging characteristics" is withdrawn in light of the amendment.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1, 3-5, 8-10, 12-14 and 18-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear what the term "rapid transient mode" means. For the purposes of examination, "rapid transient mode upward" will be interpreted to increasing output, and "rapid transient mode downward" will be interpreted to mean decreasing output.

In the response filed January 9, 2008, Applicant asserts that the term "rapid transient mode" is defined in the specification in paragraph [0020]. While this paragraph provides a description of rapid transient modes, it is still unclear what is meant by the term. Several parts of the paragraph are unclear. For example, it is unclear how a change in the capacity of the compressor is relevant when the purpose of the transient

modes is to increase or decrease the speed of the compressor. Additionally, Applicant provides an “exemplary threshold rate” but does not indicate that this is the specific transient rate. While Applicant states that a "rapid" transient is within the range on the order of 40%/sec, it is unclear from the context that this is for the rapid transient mode of the instant claims.

Additionally, one having ordinary skill in the art, upon reading the instant specification, would assume that any ordinary variable speed compressor would be capable of changing its speed as required in the instant claims since the specification does not teach a special compressor that is capable of a rapid transient mode while ordinary compressors are not.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-5 and 8 are rejected under 35 U.S.C. 102(e) as being anticipated by Arnold et al. (US 6,647,724).

Arnold et al. teach a compressor to boost air provided to an engine (column 4 lines 26-36). The compressor has variable speed and is driven by a motor (column 3 lines 49-65).

The compressor further comprises a controller that can switch the power to the motor from one source to another, which allows for recharging of the power source not being used (column 4 lines 59-66). The second power source is used during intermittent bursts of power, or rapid transient modes upward, and the power source may be a capacitor or supercapacitor (column 5 line 66 - column 6 line 19).

As for claims 2-4 and 8, as discussed above, the controller controls the normal, or non-bursting mode, as well as the bursting mode.

As for claim 5, when the compressor returns to normal operation after a burst, the capacity is inherently lower during normal operation as compared to during the burst.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 9 and 21-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arnold et al. as applied to claim 1 above, and further in view of Lahiff (US 2003/0068538).

The teachings of Arnold et al. as discussed above are incorporated herein.

Arnold et al. teach a variable speed compressor operating at a normal mode or in rapid transient upward or downward modes powered by a supplemental power source such as a capacitor or supercapacitor. With regard to claim 25, Arnold et al. further teach recharging of the of the supplemental power source when it is not in use (column 4 lines 59-66).

As for claim 22, as discussed above, the controller of Arnold et al. controls the normal, or non-bursting mode, as well as the bursting mode.

As for claim 23, when the compressor returns to normal operation after a burst, the capacity is inherently lower during normal operation as compared to during the burst.

With regard to claims 24 and 26, the second power source of Arnold et al. is used during intermittent bursts of power, or rapid transient modes upward, and the power source may be a capacitor or supercapacitor (column 5 line 66 - column 6 line 19).

Arnold et al. fail to teach the use of regeneratively braking of a motor to charge the supplemental power source.

Lahiff teaches a compressor for controlling oxidant to a fuel cell (abstract). The compressor is controlled by a controller ([0040]).

Lahiff teaches using electricity derived from regeneratively braking a motor in the included in the same system as the compressor to charge a storage battery ([0033]). Lahiff further teaches using the storage battery to power the compressor ([0045]).

It would be desirable to charge the supplemental power source of the compressor of Arnold et al. such as taught by Lahiff since regenerative braking provides electricity for charging without drawing electricity from other sources where it might be needed, thus reducing the overall electricity needed to run the system.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to charge the supplemental power source of the compressor of Arnold et al. such as taught by Lahiff since it is more efficient.

Arnold et al. and Lahiff are analogous art because both are drawn to variable speed compressors. One having ordinary skill in the art would look to other arts containing teachings on compressors if it was desired to find information about compressors, regardless of the application of the compressor.

9. Claims 10-14 and 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lahiff in view of Arnold et al.

The teachings of Lahiff and Arnold et al. as discussed above are incorporated herein.

Lahiff teaches a compressor for controlling oxidant to a fuel cell (abstract). The compressor is controlled by a controller ([0040]).

Lahiff teaches using electricity derived from regeneratively braking a motor in the included in the same system as the compressor to charge a storage battery ([0033]). Lahiff further teaches using the storage battery to power the compressor ([0045]).

Lahiff teaches changing the efficiency of the compressor by using valves to cut off supply of oxidant to the fuel cell when it is desired to provide less oxidant (abstract, [0050]). The output of the stack is controlled by the air that is provided by the compressor ([0030]).

Lahiff fails to teach varying the speed of the compressor instead of using valves to control the output.

Arnold et al. teach a variable speed compressor used to provide air (column 4 lines 26-36). The compressor has variable speed and is driven by a motor (column 3 lines 49-65).

The compressor further comprises a controller that can switch the power to the motor from one source to another, which allows for recharging of the power source not being used (column 4 lines 59-66). With regard to claim 18, the second power source is used during intermittent bursts of power, or rapid transient modes upward, and the power source may be a capacitor or supercapacitor (column 5 line 66 - column 6 line 19).

As for claims 11-13, as discussed above, the controller controls the normal, or non-bursting mode, as well as the bursting mode.

As for claim 14, when the compressor returns to normal operation after a burst, the capacity is inherently lower during normal operation as compared to during the burst.

With regard to claim 17, the battery, or supplemental power source, of Lahiff can be charged by electricity generated by the fuel cell ([0045]).

It would be desirable to use the variable speed compressor system Arnold et al. to vary the amount of oxidant provided to the fuel cell of Lahiff, instead of the compressor and valve system of Lahiff, since it would reduce the need for valves in the system, thus making the system more simple. Additionally, the variable speed would reduce waste air, since only the oxidant needed by the fuel cell would be provided.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the variable speed compressor system Arnold et al. to vary the amount of oxidant provided to the fuel cell of Lahiff, instead of the compressor and valve system of Lahiff, since it would reduce the need for valves in the system, thus making the system more simple. Additionally, the variable speed would reduce waste air, since only the oxidant needed by the fuel cell would be provided.

Response to Arguments

10. Applicant's arguments, see Remarks, filed January 9, 2008, with respect to the rejection of the claims have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground of rejection is made, see above.

Applicant's arguments concerning the 112, second paragraph rejection are addressed above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alix Elizabeth Echelmeyer whose telephone number is (571)272-1101. The examiner can normally be reached on Mon-Fri 8-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Susy N. Tsang-Foster can be reached on 571-272-1293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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aee

/Susy N Tsang-Foster/
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